resulting in cost-effectiveness different to that of younger cohorts that receive the complete intervention: multi-cohort models can include both these "complete" and "partial" cohorts. Some multi-cohort models described as population models impose finite time horizons at which the intervention is assumed to cease, although health effects are typically assessed until death. **ANALYSIS:** If cost-effectiveness differs between partial and complete cohorts, then the overall cost-effectiveness estimate from a multi-cohort model will depend on the relative numbers of partial and complete cohorts. The total number of complete cohorts depends on how long the intervention is used, which is uncertain. Therefore, the overall estimate may depend, in part, on the number of future cohorts assumed. The appropriateness of time horizons depends on whether a cross-sectional or a longitudinal cohort approach is used. Assuming an intervention ceases at a time horizon is unrepresentative of actual implementation and may result in biased cost-effectiveness estimates for curtailed cohorts. **CONCLUSION:** Multi-cohort modeling is advocated as being more representative of actual implementation. However, a single cost-effectiveness estimate for multiple cohorts necessarily implies an aggregation of estimates. Such aggregation leaves estimates sensitive to assumptions of the number of cohorts included, can hide useful information, and lead to nonoptimal policy choices. We suggest cost-effectiveness estimates for the complete and incomplete cohorts should not be aggregated, but reported separately. Implementation time horizons should not be used in longitudinal cohort-based modeling in cost-effectiveness analysis.

BI3

COMMON AND AVOIDABLE ERRORS IN ECONOMIC MODELING: A REVIEW OF THE FREQUENCY AND IMPACT OF MODELING MISTAKES

Taylor M, Kenworthy J, Lewis L
York Health Economics Consortium, York, North Yorkshire, UK

BACKGROUND: Cost-effectiveness models are often used to predict the costs and health outcomes that are likely to be associated with various different interventions. Models are a useful tool for representing the detailed and complex "real world" in a more simple and understandable structure. While models do not claim to necessarily create an exact replica of the real world, they can be useful in demonstrating the relationships and interactions between various different factors. However, developers of models often consciously, and unconsciously, make assumptions that are avoidable and may bias the results of a model. **METHODS:** A review was undertaken on a random selection of published models in different disease areas to aim to identify the frequency of typical "errors" in economic models. In addition, a simple model was developed and used to explore the relative impact of different types of errors in models. Each type of error was examined for its likely impact on the model's overall findings and conclusions. This helped to gain a greater understanding of both the frequency of different errors and their magnitude of effect. **RESULTS:** Mistakes are commonly observed in economic models. These were often due to limitations in scope of the model, but all were found to be avoidable given unlimited time and data availability. As well as identifying "major" errors in models, the review also identified many common errors, such as excluding "half cycle correction," that often have very little impact on a model's results, relative to other common errors. **CONCLUSIONS:** While many errors in economic models are frequent, many errors often go unnoticed and have significant impact upon a model's results. This analysis has highlighted the relative importance of each type of error and has provided suggestions as to how these might be avoided.

BI4

ARE SECOND OPINIONS OBJECTIVE? BIASES IN SECOND-OPINION CONSULTATIONS

Vashitz G[1], Pliskin JS[2], Parmet Y[2], Kosashvili Y[3], Ifergane G[4], Wientroub S[5], Davidovitch N[2]
[1]Technion Institute of Technology, Haifa, Israel; [2]Ben Gurion University of the Negev, Beer-Sheva, Israel; [3]Assaf Harofeh Medical Center, Zerrifin, Israel; [4]Soroka University Medical Center, Beer-Sheva, Israel; [5]Dana Children's Hospital, Tel-Aviv Sourasky Medical Center, Sackler Faculty of Medicine, Tel-Aviv University, Tel-Aviv, Israel

OBJECTIVES: Discrepancies in diagnosis, treatment, or prognosis may emerge among physicians. a known decision-making bias is the tendency to shift personal opinion either toward or away from a previous opinion. We sought to evaluate such biases in the context of second-opinion medical consultations. **METHODS:** We distributed a survey questionnaire to a nationwide sample of orthopedic surgeons and neurologists. The questionnaires presented eight scenarios, each with conventional treatment options with no clear-cut preference. In four scenarios, the physicians were told that a previous opinion had already been given by another physician, or that a second opinion will be given, and the other four scenarios were used as controls. The physicians' responses were coded according to the level of intervention (conservative to interventional). **RESULTS:** 172 orthopedic surgeons and 160 neurologists filled out the questionnaires, which represent about 50% of these specialties in Israel. In the orthopedic questionnaire, when a first opinion had already been given, there was a shift toward a more interventionist treatment ($P < 0.05$). This was especially prominent when the first opinion was known to the second physician. When the patient intended to seek a second opinion, there was a shift toward a more conservative treatment. No such effect was found among neurologists. **CONCLUSIONS:** Physicians' judgment may be affected by another physician's opinion (compared to their choices without a first opinion). This bias mainly tends toward a more interventionist treatment. Due to the immense impact of any decision on patient health and resource use, further research should address such biases and develop tools to address them.

PODIUM SESSION III: HTA POLICY APPROACHES

HT1

REAL-WORLD DATA—IMPROVING APPROACHES FOR DEMONSTRATING BENEFITS AND RISKS OF NEW DRUGS

Lucas F[1], Arenson SM[2]
[1]Pope Woodhead and Associates, St. Ives, UK; [2]Cambridge University, Cambridge, UK

OBJECTIVES: Regulators and payers view randomized controlled trials (RCT) as the gold standard for establishing the benefit/risk of new drugs. However, they are increasingly interested in real-world data (RWD) due to their external validity. This survey explored stakeholders' perceptions and emerging trends in the area of RWD. **METHODS:** We identified relevant literature since 2006 via Google Scholar and manual search, and reviewed it based on several topics: types of RWD, pros and cons of different approaches, and impact of new statistical techniques and technology on availability and quality of RWD. We then conducted 45–60 min in-depth, semistructured discussions with 17 experts from Academia, HTA bodies, health insurance, research organizations, and pharmaceutical industry—from the UK, France, Germany, the The Netherlands, and the United States. Their views about value and future directions of RWD approaches were elicited. **RESULTS:** Experts unanimously thought that RCTs would remain a mandatory approach for the foreseeable future due to the limitations of RWD, mainly potential for confounding. New study designs (e.g., randomized database studies) and statistical techniques (e.g., high-dimensional propensity scoring) remove confounding only partially and need to gain credibility. There was a strong view that, while registries have been the reference source of observational data, there is an opportunity for (claims) database and electronic medical records to form an efficient platform for automatic, real-time analysis of naturalistic data. Despite a few good examples, it will, however, require time to resolve technical difficulty of linking databases and, crucially, the challenges of data ownership and privacy issues. Several experts predict the short-term rise of at-home monitors, "smart pills," and "smart phones" that automatically feed into databases, and the increased use of data from Google Health and Microsoft HealthVault. **CONCLUSIONS:** RWD may eventually become the new gold standard in drug development, but this will occur only through incremental progress.

HT2

INFLUENCE OF HTA AND HOSPITAL FUNDING SYSTEMS ON PATIENT ACCESS TO INNOVATIVE MEDICINES: EXAMPLE OF ADVANCED RENAL CELL CANCER IN WESTERN EUROPE

Toumi M[1], Misset J[2], Jaroslawski S[3], Aballea S[3], Baynton E[4], Lamure M[1]
[1]University Claude Bernard Lyon 1, Lyon cedex 08, Rhone Alpes, France; [2]Hôpital Saint-Louis, Paris, Ile de France, France; [3]Creativ Ceutical, Paris, Ile de France, France; [4]European Oncology Monitor Synovate Healthcare, London, London, UK

OBJECTIVES: Prices of recently launched targeted therapies are relatively high and patient access differs between European countries. Advanced renal cell cancer (aRCC) is a rare malignancy with poor prognosis for which four such drugs are available: sunitinib, sorafenib, bevacizumab, and temsirolimus. We investigated relations between funding decisions of national health authorities and patient access to these treatments. **METHODS:** We reviewed Web sites of health authorities in France, Germany, Italy, and UK. Data on drug utilization from June 2006 to July 2009 were extracted from the Synovate Oncology Monitor, an ongoing prescription database based on doctors' diaries. Total sample size varied between countries, from 7766 to 9463 patients within the year ending 2009 Q2. **RESULTS:** Sunitinib was granted restricted recommendation by NICE (UK) in March 2009, but other treatments were not assessed during study period. All drugs were financed through payment-for-performance schemes (P4PS) with a registry in Italy. In France, bevacizumab and temsirolimus were reimbursed on top of DRGs and in Germany only bevacizumab. Sunitinib was the first line treatment in 62%, 50%, 47%, and 31% of drug-treated patients in France 2006Q3–2009Q2), Germany, Italy, and UK, respectively, followed by temsirolimus in France and Germany but sorafenib in Italy. Sorafenib was the most widely used second line treatment in Germany and Italy. In France, temsirolimus was used off-label in first line and bevacizumab before funding decision in aRCC was granted. In UK, many patients remained untreated. **CONCLUSIONS:** Funding on top of DRGs in France contributed to early uptake and off-label usage. P4PS were associated with enhanced drug uptake in Italy. In UK, the lack of assessment by NICE prevented patient access, which raises concern about the current financing system. The large differences in patient access to recently approved cancer treatments raise the issue of equity and health outcomes associated with innovative drugs.

HT4

EVIDENCE EXPECTATIONS FROM PAYERS ACROSS THE EU: DOES THE DISEASE BURDEN ON HEALTH-CARE BUDGETS HAVE AN EFFECT?

Kirpekar S, Mukku SR
Double Helix Consulting Group, London, UK

OBJECTIVES: Payer expectations for reimbursement from novel drugs are constantly increasing. Understanding these is crucial during evidence generation. Expectations in terms of clinical outcomes vary across EU countries. This study compared payer awareness and expectations in two disease areas with contrasting prevalence and subsequent impact on health-care budgets, and thus their impact on reimbursement. **METHODS:** The study was conducted in EU5 markets. Opinions of 36 stakeholders were collected via telephone interviews. Value drivers for new drugs were tested including unmet need, clinical data—safety and efficacy, cost-effectiveness, budget